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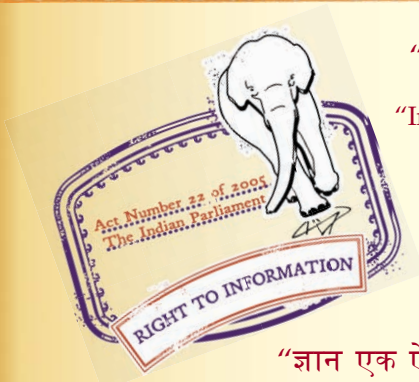
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IS 5544 (1970): Hot Food Cabinets for Use with LPG [MED 23: Domestic and Commercial Gas Burning Appliances]



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IS : 5544 - 1970

*Indian Standard*

SPECIFICATION FOR  
HOT FOOD CABINETS FOR USE WITH LPG

( First Reprint FEBRUARY 1978 )

UDC 643.353.32 : 662.767



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INDIAN STANDARDS INSTITUTION  
MANAK BHAVAN, 9, BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

Price Rs. 5.00

Gr 2

June 1970

# *Indian Standard*

## SPECIFICATION FOR HOT FOOD CABINETS FOR USE WITH LPG

Domestic and Commercial Gas Burning Appliances ( Pressure Type )  
Sectional Committee, CPDC 23

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**INDIAN STANDARDS INSTITUTION**  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

# *Indian Standard*

## SPECIFICATION FOR HOT FOOD CABINETS FOR USE WITH LPG

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 8 January 1970, after the draft finalized by the Domestic and Commercial Gas Burning Appliances (Pressure Type) Sectional Committee had been approved by the Consumer Products Division Council.

**0.2** Compliance with this standard does not of itself guarantee that satisfactory service will be attained. Conditions of use vary greatly and it is necessary to relate the standards of performance to the actual use to which the appliance will be subjected during its life.

**0.3** In preparing this standard, assistance has been derived from B.S. 4104:1967 'Specification for catering equipment burning liquefied petroleum gases' issued by the British Standards Institution.

**0.4** This standard is one of a series of Indian Standards on various domestic and commercial gas burning appliances (pressure type) used with liquefied petroleum gases. IS. 5116-1969\* is a necessary adjunct to this standard. Should, however, any deviation exist between the requirements given in IS: 5116-1969\* and those of this standard, provisions of the latter shall apply.

**0.5** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS: 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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### 1. SCOPE

**1.1** This standard specifies the constructional and performance requirements of hot food cabinets for use with liquefied petroleum gases at a

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\*General requirements for domestic and commercial equipment for use with LPG.

†Rules for rounding off numerical values (*revised*).

working pressure of 30 gf/cm<sup>2</sup>, designed to maintain the temperatures as follows:

- |                       |  |
|-----------------------|--|
| a) Without heated top | Hot food cabinet temperature — 80°C<br>(average) Top temperature — below<br>55°C (average) |
| b) With heated top    | Hot food cabinet temperature — 80°C<br>(average) Top temperature — above<br>55°C (average) |

## 2. TERMINOLOGY

**2.0** For the purpose of this standard, the following definitions, in addition to those given in 2 of IS:5116-1969\*, shall apply.

**2.1 Hot Food Cabinets Warming Space** — The total of the space, in cubic metres, in all compartments that can be usefully employed for stacking plates.

**2.2 Heated Top Area** — This should be interpreted as a purpose built area in square metre on the top of the hot food cabinets.

## 3. MATERIAL

**3.1** The relevant requirements for materials given in Section 1 of IS:5116-1969\* shall apply.

## 4. CONSTRUCTION

**4.0** In addition to the relevant constructional requirements given in Section 1 of IS:5116-1969\*, the requirements given in 4.1 to 4.4 shall apply.

**4.1** The design shall facilitate cleaning of spillage from the base and door runners.

**4.2** Sliding doors shall not be dislodged during opening or closing.

**4.3** Where no thermostat is fitted, the burner flames shall not be permanently lit back or extinguished due to opening and closing of any doors on the appliance when the gas tap is adjusted to give the temperature maintenance gas rate defined thereunder. Individual burner flames shall cross-light at full gas rate and be stable at the temperature maintenance gas rate.

**4.4** The fixed setting thermostat shall be set to within  $\pm 5$  deg of the nominal working temperature.

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\*General requirements for domestic and commercial equipment for use with LPG.

## 5. PERFORMANCE

**5.0** In addition to the relevant performance requirements specified in Section 2 of IS:5116-1969\*, the requirements given in 5.1 to 5.5 shall apply.

**5.1 Combustion**—When sampled as detailed in 5.1.1, the CO/CO<sub>2</sub> ratio shall not exceed 0.02 percent with individually heated sections operating alone and also in conjunction with associated units.

**5.1.1** The variable thermostat shall be set at its maximum setting, the gas lighted and doors closed. Sample of the products of combustion shall be taken from the flue outlet after 15 minutes.

**5.2 Heating Test**—When tested as given in Appendix A, the hot food cabinet temperature shall rise through 65 deg within 45 minutes and the average temperature of the top, if heated, shall rise through 40 deg in 45 minutes.

**5.3 Temperature Distribution Test**—When tested according to Appendix B the temperature at any check point shall not differ by more than  $\pm 8$  deg from the mean within the hot food cabinet. In case of heated top, the temperature at any check point on the top shall not differ by more than 8 deg from the mean.

**5.4 Temperature Maintenance Test**—When tested according to Appendix C the hourly heat input required per cubic metre of warming space to maintain a temperature of 65 deg above room temperature shall be as follows:

For fully insulated hot food cabinets  $\frac{120}{\sqrt[3]{V}}$  kcal/h

For partly insulated hot food cabinets  $\frac{140}{\sqrt[3]{V}}$  kcal/h  
(for example for, heated top)

For hot food cabinets having no insulation  $\frac{160}{\sqrt[3]{V}}$  kcal/h

where  $V$  is the volume of warming space in cubic metres.

For hot food cabinets with heated top, add  $60 A/V$  to each of the above formulae, where  $A$  is the area of the heated top in square metres.

**5.5** Temperature readings shall be taken as given in 5.5.1 to 5.5.2.

**5.5.1** Hot food cabinet temperature readings shall be taken by means of thermocouple placed in the centre of 5 cm diameter blackened copper

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\*General requirements for domestic and commercial equipment for use with LPG.



sphere, in each compartment which is bounded above and below by the top, the shelf or the bottom. The position on which the readings are taken shall be in the vertical plane of each compartment which is parallel to the width and midway between back and the front compartment at one-sixth, three-sixths and five-sixths of the horizontal central line of the plane.

**5.5.2** Heated top temperatures shall be measured by means of thermocouple or surface pyrometer at three positions, midway from front to rear and at one-sixth, three-sixths and five-sixths of the width.

## **6. INSTRUCTIONS**

**6.1** The hot food cabinets shall be supplied with the instructions given in **23** of IS: 5116-1969\*.

## **7. MARKING**

**7.1** The requirements given in **24** of IS: 5116-1969\* shall apply.

## **8. PACKING**

**8.1** The requirements given in **25** IS: 5116-1969\* shall apply.

# **APPENDIX A**

*(Clause 5.2)*

## **HEATING TEST**

### **A-1. OBJECT**

**A-1.1** To determine the time required for the hot food cabinet average temperature to rise 65 deg above the room temperature and, if with heated top, the time required for this section to rise 40 deg above room temperature using Test Gas A.

### **A-2. PROCEDURE**

**A-2.1** Turn the thermostat, unless fixed, to its maximum setting and turn the gas tap full 'ON'. Measure the temperature as described in **5.5** and note the time taken to reach an average hot food cabinet temperature of 75°C and an average heated top temperature to of 50°C. Assess from a graph the time required for the average temperature to rise 65 deg and, if with heated top, the time required for this section to rise 40 deg.

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\*General requirements for domestic and commercial equipment for use with LPG.

## **APPENDIX B**

*( Clause 5.3 )*

### **TEMPERATURE DISTRIBUTION TEST**

#### **B-1. OBJECT**

**B-1.1** To determine the evenness of temperature throughout the warming space and the heated top area using Test Gas A.

#### **B-2. PROCEDURE**

**B-2.1** Cover all shelves with a single layer of 240 to 250 mm dia dinner plates. With the gas tap full 'ON' and any thermostat set to maintain an average temperature of  $80^{\circ} \pm 5^{\circ}\text{C}$ , light the gas. Allow the appliance to heat up and, if no thermostat is fitted, adjust the gas rate to maintenance as soon as this temperature is reached. Measure temperatures as described in 5.5 when steady.

Thermostat setting and gas rate to maintain approximately steady temperatures should be determined beforehand.

## **APPENDIX C**

*( Clause 5.4 )*

### **TEMPERATURE MAINTENANCE TEST WITHOUT HEATED TOP**

#### **C-1. OBJECT**

**C-1.1** To determine the hourly heat input required per cubic metre of warming space to maintain a rise of 65 deg above room temperature using Test Gas A.

#### **C-2. PROCEDURE**

**C-2.1** Proceed as described in Appendix B but repeating the test at various temperatures. Plot maintenance gas rate in kcal/h against temperature rise and obtain by interpolation the gas rate corresponding to a temperature rise of 65 deg above room temperature. Divide the figure obtained by the volume of warming space in cubic metres to give the hourly heating rate per cubic metre of warming space, required to maintain temperature.

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